REMARKS

The Applicant thanks the Examiner for the careful examination of this application and respectfully requests the entry of the amendments indicated hereinabove. The Amendment is presented to prepare this case for appeal.

Claims 1-14 are pending. Of the pending claim set, Claims 1-2, 7-8, 10-11 and 14 are rejected while Claims 3-6, 9 and 12-13 are objected to. Claims 1, 4, 8, 12 and 13 are amended, Claim 7 is cancelled, and Claims 15-16 are added hereinabove.

Amended Claim 1 positively recites forming a halo structure, forming a trench that removes a portion of the halo structure, and then forming a semiconductor material layer in the trench. The step of forming a semiconductor material layer in the trench comprises forming an intrinsic silicon layer in a bottom portion of the trench and forming a doped silicon layer in a top portion of the trench overlying the intrinsic silicon layer. These advantageously claimed features are not taught or suggested by the patent granted to Park et al.

Park et al. teaches away from the advantageously claimed invention because Park et al. teaches that the implantation of the extension regions is performed before the formation of the trench (column 4 lines 26-51, FIGS. 1-2)

versus the implantation of the extensions (FIG. 5H - elements 142, 144, 146) after the formation of the trench as advantageously claimed.

The Applicant respectfully traverses the assertion in the Office Action that the "HDD dopant into a top portion may reasonable be attained with the parameters as disclosed by Park at col. 5, line 59 to col. 6 line 5." The Applicant submits that the Office Action confuses source/drain regions with extension regions. Specifically, in the cited section of Park et al., the "parameters" are used to dope the source and drain regions (element 50) but not the extensions (element 40) as advantageously claimed (column 5 lines 59-62, FIG. 5).

Furthermore, Park et al. teaches away from the advantageously claimed invention because Park et al. teaches in the Detailed Description that the first halo regions (38) are bounded by extension regions (40) (column 4, lines 27-28 and 36-37). However, the Applicant notes that FIGS. 1-2, 4-5, and 7-10 illustrate that Park et al. teaches that the extension regions (40) are bounded by the first halo regions (38) (this contradictory structure is also claimed in Park's Claims 4, 12, and 19). Regardless which version of the Park et al. teaching is used, it is not the advantageously claimed method of the Applicant where the extension regions and the halo implant are unbounded.

Moreover, the Applicant respectfully traverses the statement in the Office Action (page 2) that "it would have been obvious to one of ordinary skill in the art at the time the invention was made to use an angle implant as taught by applicant's admitted prior art in Park's process". The Applicant submits that one of ordinary skill in the art would not combine the Applicant's prior art with Park et al.'s process because Park et al. teaches a low energy implant process (column 4 lines 10-19, claims 2, 11, and 16) but the Applicant teaches a typical high energy implant process (including in the admitted prior art). The Applicant's position is even supported by Park et al. because Park et al. states that the high energy halo process (taught by the Applicant) is inferior (column 7 lines 37-57).

Therefore, the Applicant respectfully traverses the Examiner's rejection of Claim 1 and respectfully asserts that Claim 1 is patentable over Park et al. Furthermore, Claims 2, 4-6, and 10-14 are allowable for depending on allowable independent Claim 1 and, in combination, including limitations not taught or described in the references of record.

Amended Claim 8 positively recites forming a halo structure, forming a trench that removes a portion of the halo structure, and then forming a semiconductor material layer in the trench. Claim 8 further recites implanting an HDD dopant into a top portion of the trench. These advantageously claimed features are not taught or suggested by the patent granted to Park et al.

Park et al. teaches away from the advantageously claimed invention because Park et al. teaches that the implantation of the extension regions is performed before the formation of the trench (column 4 lines 26-51, FIGS. 1-2) versus the implantation of the HDD extensions (FIG. 7 – element 346) after the formation of the trench as advantageously claimed.

The Applicant respectfully traverses the assertion in the Office Action that the "HDD dopant into a top portion may reasonable be attained with the parameters as disclosed by Park at col. 5, line 59 to col. 6 line 5." The Applicant submits that the Office Action confuses source/drain regions with HDD extension regions. Specifically, in the cited section of Park et al., the "parameters" are used to dope the source and drain regions (element 50) but not the extensions (element 40) as advantageously claimed (column 5 lines 59-62, FIG. 5).

Furthermore, Park et al. teaches away from the advantageously claimed invention because Park et al. teaches in the Detailed Description that the first halo regions (38) are bounded by extension regions (40) (column 4, lines 27-28 and 36-37). However, the Applicant notes that FIGS. 1-2, 4-5, and 7-10 illustrate that Park et al. teaches that the extension regions (40) are bounded by the first halo regions (38) (this contradictory structure is also claimed in Park's Claims 4, 12, and 19). Regardless which version of the Park et al. teaching is used, it is not the

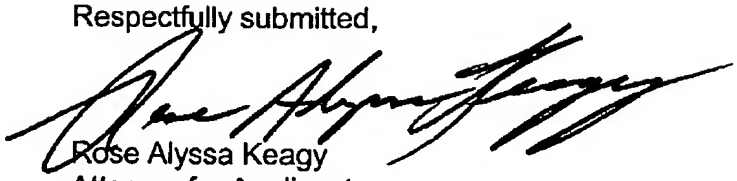
advantageously claimed method of the Applicant where the extension regions and the halo implant are unbounded.

Moreover, the Applicant respectfully traverses the statement in the Office Action (page 2) that "it would have been obvious to one of ordinary skill in the art at the time the invention was made to use an angle implant as taught by applicant's admitted prior art in Park's process". The Applicant submits that one of ordinary skill in the art would not combine the Applicant's prior art with Park et al.'s process because Park et al. teaches a low energy implant process (column 4 lines 10-19, claims 2, 11, and 16) but the Applicant teaches a typical high energy implant process (including in the admitted prior art). The Applicant's position is even supported by Park et al. because Park et al. states that the high energy halo process (taught by the Applicant) is inferior (column 7 lines 37-57).

Therefore, the Applicant respectfully traverses the Examiner's rejection of Claim 8 and respectfully asserts that Claim 8 is patentable over Park et al. Furthermore, Claims 9 and 15-16 are allowable for depending on allowable independent Claim 8 and, in combination, including limitations not taught or described in the references of record.

This application is believed to be in condition for allowance. Reexamination and reconsideration is requested.

Respectfully submitted,



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